

Monsanto

147784

FROM (NAME-LOCATION-PHONE) R.H. Sinise, W. G. Krummrich Plant (2271)

DATE November 10, 1980
SUBJECT MEETING WITH I-EPA
"DEAD CREEK" 11/7/80
REFERENCE
TO P.E. Heisler

cc: S.G. Collins A3ND
M.R. Foresman G4WA
R.G. Kaley T2F
J.W. Molloy (2 copies)
P.S. Park E2NE
W.B. Papageorge G4WA
J.J. Spano G4NH
J.H. Craddock B2SC

Present at Meeting:

P. Heisler, WGK
R. Sinise, WGK
R. Kaley, G.O.
Jim Kelty, I-EPA
Frank Schmidt, I-EPA (Champaign Lab)
Roy Frazier, I-EPA (Champaign Lab)
John Renkes, I-EPA
John Hairley, I-EPA (Springfield Lab)

Meeting started with introductions between the participants and the exchange of sampling results:

	<u>I-EPA</u>	<u>Monsanto</u>
1) North sample (Queen Avenue)	10,000 ppm PCB 2,000 ppm P (total) did not measure	13,000 ppm PCB 2,500 ppm P (total) 0 ppm P (elemental)
2) Center sample	350 ppm PCB 8900 ppm P (total) did not measure	240 ppm PCB 13,000 ppm P (total) 0 ppm P (elemental)
3) South Sample	73 ppm PCB 4700 ppm P (total)	45 ppm PCB 9400 ppm P (total) 0 ppm (elemental)
4) Well Sample	0 ppm PCB	<1 ppb PCB

There was agreement that the results were done within the limitations of the sampling and analyzing variables and well within the sample variations seen in the creek dirt. To avoid confusion, only the I-EPA results would be released to the public with a statement verifying that Monsanto results

CER 069668

were in close agreement. We stressed the importance of releasing to the public the fact there was no elemental phosphorus present, that phosphorus has not caused the "spontaneous combustion" referenced in the media. The IEPA agreed to say Monsanto found no elemental phosphorus and that the IEPA may conduct additional analysis to verify this fact.

The lab people from Champaign verbally stated they had no indications of elemental phosphorus during their analysis and agree there probably was not any present.

We gave them a copy of our results and a copy of the method we use to analyze for elemental phosphorus. We discussed methods of releasing this information to the press and suggested the IEPA Public Relations representative work with our Sarah Collins. They appeared to agree but based on their recent style of unilateral release of information, we reinforced our request that no elemental phosphorus was found, and this be included in any release.

Renkes from IEPA picked up the meeting following some discussions concerning sample methods.

- Q. We have an obvious problem in Dead Creek with burning dirt. Has Monsanto formed an "opinion" as to the cause?

Our "opinion" is that people burn rubbish in the Creek area, the municipal employees burn brush, and a midnight hauler probably has been dumping lube oil etc. at the site. The combination of both causes ignition. In addition, there may be enough peat from decomposed leaves to support ignition for a period of time.

- Q. At the end where there is "spontaneous burning", we have found no organics. Residents have made statements that burning starts on hot days and glows at night.

We have first investigated the problem in June, 1980, when we received notice of burning ground. Upon investigation we saw white smoke indicating the potential of elemental phosphorus. We measured but did not find it. Further, the smoke did not smell like it came from phosphorus nor did the smoldering itself look like phosphorus. We do not understand fully how this combustion could sustain itself.

CER 069669

Q. Do we have any opinion on where the PCB's came from.

We stated that we firmly believe we are not at fault in causing the PCB to be present in the ditch. The total phosphorus analyzed for us, in our opinion, is present from agricultural runoff. The PCB's and with the Trichlorobenzene's indicated to us someone has dumped transformer oils in the ditch. We have records on PCB disposal back several years and we have always disposed of PCB wastes in an environmentally acceptable manner. We historically have used Bills-of-Lading to ensure all wastes land-filled on non-Monsanto owned land. This practice was followed to control disposal.

Paul further stated that the sewer effluent of our plant since 1932 could not have gone into Dead Creek since the Creek is 1.9 feet higher than the sewer system. PCB was manufactured starting in 1936. We have landfilled the waste in our own land-fill or incinerated them in a high temperature incinerator. This unit was shut down and we have since put PCB's in long term storage.

Renkes then further pursued the "obvious implication of Monsanto due to proximity." We responded by stating that we are not responsible and we know of no way we could identify who manufactured the PCB's found in the ditch. He then asked on an informal basis:

"As a good neighbor would we (Monsanto) consider assisting our department in the mitigation of the Dead Creek problem. Mitigation meaning removing the soil to one of eight federal approved controlled sites at Monsanto's expense."

Paul responded by stating that we don't have the authority here to make that decision and will have to discuss with our supervision. As a stockholder, I would be against it, but I must discuss with the appropriate Monsanto management before formally responding.

We asked the extent of the soil removal Renkes had in mind. That is, all dirt with PCB greater than 1000 ppm or what. Kelty responded by stating that 50 ppm is the federal figure and that is as good as any. Kelty will, however, decide what the baseline figure is for removal versus staying in the creek and respond to us.

I asked the question that this request seemed premature to me. If phase two analysis (groundwater quality testing) indicates no health hazard, which we believe there is some, then why could not the ditch be capped over.

CER 069666

Renkes responded by stating EPA regulations do not allow them to let contaminated soil remain in an unapproved landfill. Past precedent in the Chicago area has supported this interpretation of the regulation.

We asked if the Pollution Control Board could grant an exemption from the regulation in this case. Renkes responded by saying yes, but it is highly unlikely. Paul suggested they investigate this solution.

Renkes also questioned as to whether Monsanto had records concerning PCB disposal and whether the agency could review these records. We said we had records but didn't know how far back and would have to investigate with Monsanto Legal Department whether the agency could inspect them.

The meeting was closed by the IEPA stating they were trying to arrive at a solution prior to the Attorney General taking action. These questions and requests were informal and would not prevent the Attorney General from taking action even if we agreed to mitigation.


R.H. Sinise

/tm

Documents given to I-EPA:

- 1) Dead Creek Analysis Report No. ES-80-SS-24
- 2) Methods ES-80-M-24
ES-80-S-27
ES-80-M-29
ES-80-M-30
ES-80-M-28

CER 069667



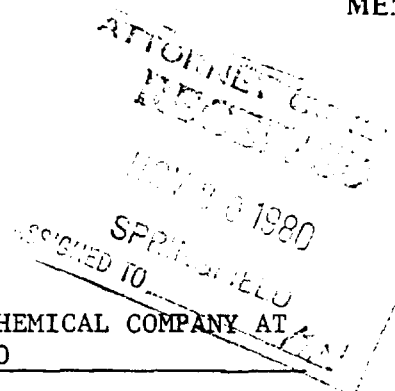
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MEMORANDUM

DATE: November 19, 1980

TO: FILE

FROM: Jim Kelty

SUBJECT: COOPERATIVE SAMPLING BETWEEN IEPA AND MONSANTO CHEMICAL COMPANY AT
DEAD CREEK, CAHOKIA, ILLINOIS, ON OCTOBER 2, 1980

On October 2, 1980 Jim Kelty and Geoff Langley of the Illinois Environmental Protection Agency and Paul Heisler and Dick Sinise of Monsanto Chemical Company jointly sampled three soil areas in Dead Creek between Queeny Road and Judith Lane. Also sampled was the private well at Theresa's Greenhouse, 101 Walnut Street, Cahokia, Illinois. It was agreed to analyze the three soil samples for PCB's and total phosphorous, and the well sample for PCB's only.

The following are the analytical results as reported by the Illinois EPA laboratories and Monsanto Chemical Co.

SAMPLE SITE	PCB's		TOTAL PHOSPHOROUS	
	IEPA	MONSANTO	IEPA	MONSANTO
1) Soil 40 yards south of Queeny Road labeled "N"	10,000	13,000	2000	2500
2) Soil Sample labeled "C" taken 268 steps south of sample "N"	350	240	8900	13,000
3) Soil Sample labeled "S" taken 270 steps south of sample "C"	73	45	4700	9400
4) Water Sample taken from private well at 101 Walnut Street, Cahokia, Illinois	N.D.*	N.D.*	N.A.**	N.A.

*None Detected (lower detectable limit for PCB's in water is 0.1 PPB).

** Sample not analyzed for phosphorous.

JK:jks

007200

MEASUREMENT OF SELECTED CHEMICALS IN SOIL FROM THE DEAD CREEK SITE ILLINOIS EPA SPLIT SAMPLES

INTRODUCTION

Following media reports and subsequent Illinois EPA concern about hazardous chemicals at the Dead Creek site near Sauget, Illinois, personnel from Monsanto's W. G. Krummrich Plant and the Illinois EPA sampled several areas at the site and split the samples. The Monsanto samples were submitted to Environmental Sciences for characterization. Monsanto's concerns about the site arose from reports of high levels of polychlorinated biphenyls and phosphorus, as well as the reported presence of other chemicals, and the proximity of the site to the Krummrich Plant. These samples were taken to give both Monsanto and the Illinois EPA opportunity to confirm the reported levels found in earlier samplings by the Illinois EPA. In addition to polychlorinated biphenyls and phosphorus, several other "families" of chemicals were measured to try to identify or eliminate possible sources of the chemicals at the site.

SUMMARY

Three sediment samples and one well water sample were taken on October 2, 1980 by Monsanto and IEPA representatives. The Monsanto samples were transferred to our laboratory and analyzed for polychlorinated biphenyls, elemental phosphorus, chlorobenzenes, chlorophenols, phosphate esters, and metals (including arsenic and inorganic phosphorus). No elemental phosphorus was detected in any of the samples, which implies that phosphorus is not responsible for the "smoking earth" reported at the site. In addition, no organic chemicals were detected above the detection limits in the well water sample. However, varying amounts of the organic chemicals and metals were measured in the soil samples. One sample contained higher levels of polychlorinated biphenyls and other organic compounds, while the other two samples contained higher levels of metals. The results clearly indicate non-uniform contamination at the Dead Creek site.

DETAILS

Sampling

The three soil and one water samples were collected by Monsanto W. G. Krummrich plant personnel and IEPA personnel and split at the site. The Monsanto samples were transferred to the Environmental Analysis Group. In our laboratory, the sediment samples were handled according to Standard Operating Procedure (SOP) EAN-80-SOP-6, Homogenizing, Subdividing and Preserving Sediment Samples. Portions of the soil samples were transferred to Applied Sciences for the determination of metals and arsenic.

00700

Analytical Procedures

The three soil samples were analyzed for a variety of chemicals using established procedures or methods developed and validated for the chemicals of interest in soil. The following list tabulates the methods which were used.

Analyte	Method No.	Title
Polychlorinated Biphenyls	ES-80-M-28	Determination of Polychlorinated Biphenyls in Soil and Sediment
Chlorinated Benzenes	ES-80-M-29	Determination of Chlorinated Benzenes in Soil and Sediment
Chlorinated Phenols	ES-80-M-30	Determination of Chlorinated Phenols in Soil and Sediment
Elemental Phosphorus (P ₄)	ES-80-M-24	Determination of Elemental Phosphorus (P ₄) in Soil and Sediment
Phosphate Esters	ES-80-M-5	Determination of Group I Compounds in Sediments . . .
Metals	Ref. 1, 2	Inductively Coupled Plasma (ICP) . . . Method for Trace Element Analysis of Water and Wastes
Arsenic	Ref. 3	Methods for Chemical Analysis of Water and Wastes-Arsenic

All determinations were carried out in strict accordance with these methods, except that the polychlorinated biphenyls, chlorinated benzenes and phosphate esters were measured in extracts from acidified samples to facilitate determination of chlorinated phenols in the same extracts.

The water sample was extracted in accordance with SOP EAN-80-SOP-19, Extraction of Semivolatile Organic Compounds from Water. The levels of polychlorinated biphenyls and phosphorus were determined using the analytical conditions specified in the respective method for soils listed above.

Results

The analytical results for this study are tabulated in Tables I-VI. Each table contains the results for all of the samples for a specific group of compounds. All results for the soils are in ppm (parts per million or µg/g). The results for the water sample are in ppb (parts per billion, ng/g). In general, the stated detection limits are the lowest level at which a given measurement was validated. Levels which are apparently real, but which are below the validated detection limit are presented in parentheses.

100000

Quality Assurance

The quality assurance results (i.e., recovery and precision evaluations) for these samples have been compiled along with those of similar samples analyzed concurrently. These results are reported in Special Study ES-80-SS-27, Measurement of Selected Chemicals in Soil from the Dead Creek Site - Quality Assurance.

REFERENCES

1. Methods for Chemical Analysis of Waters and Wastes, EPA-600/4-79-020, page: Metals-6, Section 4.1.3.
2. Federal Register, Vol. 44, No. 233, December 3, 1979.
3. Methods for Chemical Analysis of Waters and Wastes, EPA-600/4-79-020, Method 206-Arsenic, pages: 206.2-1 to 206.5-2.

007100

CC7200

TABLE I. PPM LEVELS OF PCBs AND ELEMENTAL PHOSPHORUS (P₄) IN DEAD CREEK SOIL AND WATER SAMPLES

ANALYTE	ES LOG NO. DATE SAMPLED LOCATION	0100301	0100303	0100305	(Water) 0100307	0041701
		10/2/80 40 yds south of Queeny Ave. Center of Creek	10/2/80 268 paces south of 0100301	10/2/80 270 paces south of 0100303	10/2/80 Well at Theresa's Greenhouse, 101 Walnut, Sauget, IL.	4/16/80 Soil Blank Mo. Bottoms St. Charles, MO.
PCB's (Cl ₂ to Cl ₆ Homologs)		13,000	240	45	ND < 1 ppb	ND < 1
P ₄		ND < 1	ND < 1	ND < 1	ND < 1 ppb	ND < 1

TABLE II. PPM LEVELS OF CHLOROBENZENES IN DEAD CREEK SOIL SAMPLES

ANALYTE	ES LOG NO. DATE SAMPLED LOCATION	0100301 10/2/80 40 yds south of Queeny Ave. Center of Creek	0100303 10/2/80 268 paces south of 0100301	0100305 10/2/80 270 paces south of 0100303	0041701 4/16/80 Soil Blank Mo. Bottoms St. Charles, MO.
MONOCHLOROBENZENE		(0.9)	ND < 1	(0.3)	ND < 1
P-DICHLOROBENZENE		370	(0.3)	(0.4)	ND < 1
O-DICHLOROBENZENE		80	(0.6)	1.0	ND < 1
TRICHLOROBENZENES (3)		85	1.6	(0.7)	ND < 1
TETRACHLOROBENZENES (3)		6.1	2.4	(0.4)	ND < 1
PENTACHLOROBENZENE		ND < 1	ND < 1	ND < 1	ND < 1
HEXACHLOROBENZENE		ND < 1	1.2	ND < 1	ND < 1
NITROCHLOROBENZENES (O-, P-)		120	ND < 1	ND < 1	ND < 1

() Values in parentheses are below the validated detection limit. However, they represent levels detected with a S/N > 2.5 and can be considered semi-quantitative.

981400

TABLE III. PPM LEVELS OF CHLOROPHENOLS IN DEAD CREEK SOIL SAMPLES

ANALYTE	ES LOG NO. DATE SAMPLED LOCATION	0100301 10/2/80 40 yds south of Queeny Ave. Center of Creek	0100303 10/2/80 268 paces south of 0100301	0100305 10/2/80 270 paces south of 0100303	0041701 4/16/80 Soil Blank Mo. Bottoms St. Charles, MO
O-CHLOROPHENOL		3.7	ND < 1	ND < 1	ND < 1
P-CHLOROPHENOL		6.6	ND < 1	(0.9)	ND < 1
2,4-DICHLOROPHENOL		1.2	ND < 1	ND < 1	ND < 1
PENTACHLOROPHENOL		130	ND < 1	1.8	ND < 1

() Values in parentheses are below the validated detection limit. However, they represent levels detected with a S/N > 2.5 and can be considered semi-quantitative.

TABLE IV. PPM LEVELS OF PHOSPHATE ESTERS IN DEAD CREEK SOIL SAMPLES

ANALYTE	ES LOG NO. DATE SAMPLED LOCATION	0100301 10/2/80 40 yds south of Queeny Ave. Center of Creek	0100303 10/2/80 268 paces south of 0100301	0100305 10/2/80 270 paces south of 0100303	0041701 4/16/80 Soil Blank Mo. Bottoms St. Charles, MO.
DIBUTYLPHENYL PHOSPHATE		330	ND < 1	(0.8)	ND < 1
BUTYLDIPHENYL PHOSPHATE		ND < 1	ND < 1	(0.8)	ND < 1
TRIPHENYL PHOSPHATE		2600	ND < 1	ND < 1	ND < 1
2-ETHYLHEXYLDIPHENYL PHOSPHATE		ND < 1	ND < 1	2.2	ND < 1
ISODECYLDIPHENYL PHOSPHATE		ND < 1	ND < 1	ND < 1	ND < 1
T-BUTYLPHENYLDIPHENYL PHOSPHATE		28	ND < 1	ND < 1	ND < 1
DI-T-BUTYLPHENYLDIPHENYL PHOSPHATE		ND < 1	ND < 1	ND < 1	ND < 1
NONYLPHENYLDIPHENYL PHOSPHATE		ND < 1	ND < 1	ND < 1	ND < 1
CUMYLPHENYLDIPHENYL PHOSPHATE		3.7	ND < 1	ND < 1	ND < 1

() Values in parentheses are below the validated detection limit. However, they represent levels detected with a S/N > 2.5 and can be considered semi-quantitative.

40100. PPM LEVELS OF METALS IN DEAD CREEK SOIL SAMPLES

ANALYTE	ES LOG NO. DATE SAMPLED LOCATION	0100301 10/2/80 40 yds south of Queeny Ave. Center of Creek	0100303 10/2/80 268 paces south of 0100301	0100305 10/2/80 270 paces south of 0100303	0041701 4/16/80 Soil Blank Mo. Bottoms St. Charles, MO.
SILVER		ND <1	42	29	ND <1
ALUMINUM		1400	5100	5300	5600
BARIIUM		770	1200	1300	130
BERYLLIUM		ND <1	ND <1	ND <1	ND <1
BORON		28	160	100	27
CALCIUM		8500	9200	6200	4600
CADMIUM		5.1	60	55	3.9
COBALT		15	180	120	33
CHROMIUM		25	110	240	19
✓ COPPER		460	28,000	18,000	19
✓ IRON		4700	53,000	30,000	9900
MAGNESIUM		460	2200	2000	2300
MANGANESE		29	170	110	510
MOLYBDENUM		6.1	92	68	11
SODIUM		400	540	410	320
NICKEL		110	2000	1700	39
LEAD		180	2000	1600	50
✓ PHOSPHORUS		2500	13,000	9400	610
ANTIMONY		13	240	160	29
SILICON		73	150	89	110
TIN		18	260	220	18
STRONTIUM		35	230	110	17
TITANIUM		32	110	80	37
VANADIUM		34	140	130	130
ZINC		280	32,000	18,000	56
ARSENIC (By AA)		210	40	55	5

TABLE VI. SUMMARY OF PHOSPHORUS CONTENT (PPM) OF DEAD CREEK SOIL SAMPLES

ANALYTE	ES LOG NO. DATE SAMPLED LOCATION	0100301 10/2/80 40 yds south of Queeny Ave. Center of Creek	0100303 10/2/80 268 paces south of 0100301	0100305 10/2/80 270 paces south of 0100305	0041701 4/16/80 Soil Blank Mo. Bottoms St. Charles, MO.
P - ELEMENTAL, By GC/MS		ND < 1	ND < 1	ND < 1	ND < 1
P-INORGANIC, By ICP		2500	13,000	9400	610
TOTAL PHOSPHATE ESTERS, By GC/MS		3000	ND < 10	4	ND < 10

007438

Submitted by:

Monsanto Industrial Chemicals Company
Environmental Sciences Section - N1E
800 North Lindbergh Boulevard
St. Louis, Missouri 63166

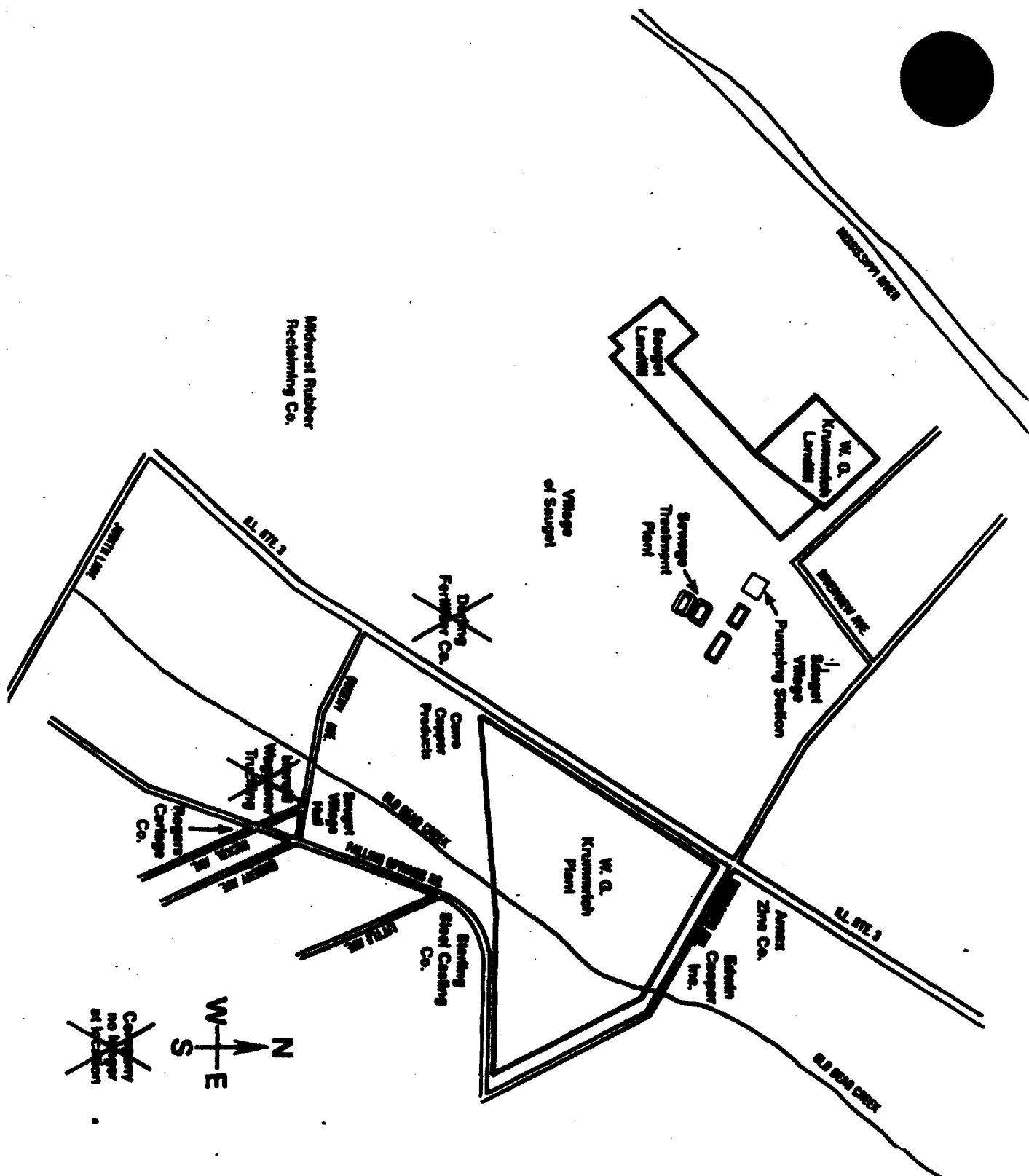
Prepared by:

Robert G. Kaley, II
Robert G. Kaley, II
Research Group Leader

Approved by:

JP Mieux
James P. Mieux
Manager, Environmental Sciences

007439



CER 037316

DEAD CREEK CHRONOLOGY

LATE AUGUST

RECEIVED REPORT OF SMOKING SOIL
IN CAHOKIA. PLANT SENT REPRESENTATIVES TO SITE. SOIL SAMPLE
TAKEN.

SEPTEMBER 8

SAMPLE ANALYSIS COMPLETED. HIGH
OIL CONTENT. NO ELEMENTAL PHOSPHORUS.
0.04% PHOSPHATES. HIGH COPPER CONTENT.

SEPTEMBER 15

MEDIA REPORTS ILLINOIS EPA FOUND PCBs,
PHOSPHORUS AND HEAVY METALS.

CER 037317

11/11/80 - WBP

007411

DEAD CREEK CHRONOLOGY

(CONTINUED)

SEPTEMBER 17

MONSANTO TOOK 7 SAMPLES.

SEPTEMBER 24

ILLINOIS EPA HELD PRESS CONFERENCE.
EPA REPORTED HIGH PHOSPHORUS AND
PCB LEVELS IN SAMPLES AND INDICATED
NO IMMEDIATE DANGER. AREA FENCED
IN BY EPA.

SEPTEMBER 29

MONSANTO MET WITH ILLINOIS EPA TO
DISCUSS JOINT SAMPLING AND ANALYTICAL
PROGRAM.

CER 037318

11/11/80 - WBP

007612

DEAD CREEK CHRONOLOGY

(CONTINUED)

OCTOBER 2

THREE SOIL SAMPLES AND ONE WELL WATER SAMPLE WERE TAKEN AND SPLIT WITH ILLINOIS EPA.

OCTOBER 31

ILLINOIS EPA ANALYTICAL RESULTS REPORTED IN BELLEVILLE NEWSPAPER. HIGH LEVELS OF PCBS AND PHOSPHORUS.

NOVEMBER 7

MONSANTO AND ILLINOIS EPA REPRESENTATIVES MET TO EXCHANGE ANALYTICAL RESULTS OF THE SPLIT SAMPLES. RESULTS AGREE WITHIN NORMAL LIMITS. PCBS WERE PRESENT. ELEMENTAL PHOSPHORUS WAS NOT PRESENT BASED ON MONSANTO DATA.

MONSANTO WAS ASKED "OFF-THE-RECORD" IF WE WOULD CONSIDER CLEANING SITE.

CER 037319

11/11/80 - WRP

007413

ANALYTICAL RESULTS

SPLIT SAMPLES

<u>SAMPLE</u>		<u>ILLINOIS EPA</u>	<u>MONSANTO</u>
1	PCBS	10,000 PPM	13,000 PPM
	INORG.-P	2,000 PPM	2,500 PPM
	P	--	0 PPM
	P-ESTERS	--	3,000 PPM
2	PCBS	350 PPM	240 PPM
	INORG.-P	8,900 PPM	13,000 PPM
	P	--	0 PPM
3	PCBS	73 PPM	45 PPM
	INORG.-P	4,700 PPM	9,400 PPM
	P		0 PPM
4	PCBS	0 PPM	1 PPB

CER 037321

11/11/80 - WBP

sent 4/6
FYI
PCW

Client	Com. Emelle
Contract	303-652-0721
Phone	314-487-8733
Fax	303-652-8102

F. Merrill
Copper
- Section 6
File

TO: Tom Benz
FROM: Jim Buckley
DATE: June 5, 1990
RE: Monsanto Proposal
Dead Creek - Sector B

Bulley - Emelle; Technical Mgr
Guinness

CONFIDENTIAL 92-CV-204-WDS

Based on a review of the background data and analytical data submitted, I offer the following observations:

1. PCB contamination is evident throughout the creek bed as found in 3 separate sampling events.
2. Heavy metal concentrations in many cases exceed EP Tox or TC "calculated" thresholds.
3. Other halogenated organic compounds present in soil besides PCB's include:

Dichlorobenzenes	(X125, P1, SD1)
Dichlorophenols	(X125, SD1)
Trichlorobenzene	(X125, P1, SD1, SD2)
Ethylene Chloride	(S07, S010, R012)
Pentachlorophenol	(SD1, SD3)
Tetrachlorobenzenes	(SD1)
2, Chlorophenol	(SD1)
Hexachlorobenzene	(SD2)
2,3,7,8 Tetrachloro-dibenzo-p-dioxin	

4. For purposes of classification, no knowledge of process is imparted or implied, therefore a specific source (K waste) or non-specific source waste (F waste) is not determinable and no discussion of spills of listed wastes (U, P) is read in the assessment.

More knowledge of the processes entering the creek should be explored before determining that the soils, when excavated, would be non-listed.

CER 008427

007710



CONFIDENTIAL 02-09-1991

5. As indicated earlier, the high metal concentration would lead one to think the soils would be possibly classed as RCRA Hazardous - EP Toxic (See 40 CFR 261.24 for possible As, Ba, Cd, Cr, Pb, Hg and Ag).

This is based on the calculation of total concentration divided by a factor of 20. This approach has been accepted by IEHA in determining applicability of characteristic listing (D004-D017).

However, based on ground water analysis it does not appear the metals are in a leachable form. This is evident based on the relatively low concentrations found in water.

6. Some of the sample locations indicate high concentration of PCB's (HOC's) and heavy metals which could potentially classify the soil as a California List Waste requiring incineration. The combination of hazardous waste (characteristic for metals) and HOC's > 1000 ppm would qualify as an incinerable - specifically PCB incineration (See 40 CFR 268.32 d.1 and 40 CFR 268.42 a.2).

Recommendations

1. Further classification via analysis and further background information is required for me to determine suitability for landfill disposal.
 - a. Run toxicity characteristic "TC" metals and run "TC" organics also. (The organics portion will be applicable 9/25/90 and if organic exceeds threshold value, then waste may be hazardous by characteristic.) See attachment.
 - b. Further investigate background of Dead Creek in order to classify under National Contingency Plan criteria.
2. The sampling for dioxins must be evaluated as to applicability to Corporate acceptance criteria of 1 ppb, 2, 3, 7, 8 TCDD. The fact that TCDD is present above detection limits raises my concerns. I must be assured, through sampling and analysis, that Corporate policies are not compromised.
3. If soils are considered non-regulated then they may be disposed of at Emelle as PCB waste. A comprehensive sampling and analysis plan should be developed in order to adequately classify waste soils upon removal.

CER 008428

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CONFIDENTIAL 92-CV-204-WDS

4. If determined to be EP toxic for metals and total HOC's do not exceed or equal 1000 ppm, Enelle may offer stabilization then landfill or the stabilization of metals may take place in-situ or via on-site process prior to shipment.
5. As you can see the LDR, BDAT, Drop Dead Dates questions all hinge on waste classification issues. Segregation may definitely be a possibility similar to a job happening in the eastern region where some material is suitable for landfill and other materials must go to incineration from the same job.
6. Pending restrictions are (1) TC rule for characteristic determination effective 9/25/90. (2) August 8, 1990 variance expiration for characteristic metal wastes treatment standards. (3) Out-of-state disposal tax effective 7/15/90. (4) Possible classification as a smelting waste (Cerro Copper) i.e. K064.

only an
opinion

~~Overall assessment of Dead Creek in perspective appears to be an on-site remediation project involving on-site technologies such as XTRAX or PYROX.~~

I appreciate the opportunity to review the project and look forward to assisting you and Monsanto in any way I can.

/llb

Attachment

CER 008429

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Table IV.3--Toxicity Characteristic Constituents and Regulatory Levels

EPA HW Number	Constituent	CAS Number	Regulatory Level (mg/L)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0
D023	o-Cresol	95-48-7	200.0 ^a
D024	m-Cresol	108-39-4	200.0 ^a
D025	p-Cresol	106-46-5	200.0 ^a
D026	Cresol		200.0 ^a
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	78-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	0.13 ^j
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its hydroxide)	76-44-8	0.005 ^j
D032	Hexachlorobenzene	118-74-1	0.13 ^j
D033	Hexachloro-1,3-butadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	1.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-69-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentachlorophenol	87-86-8	100.0
D038	Pyridine	110-86-1	5.0 ^j
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0

CER 008430

06.03.1998 09:01

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Table IV.3--Toxicity Characteristic Constituents
and Regulatory Levels (continued)

EPA HW Number	Constituent	CAS Number ¹	Regulatory Level (mg/L)
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

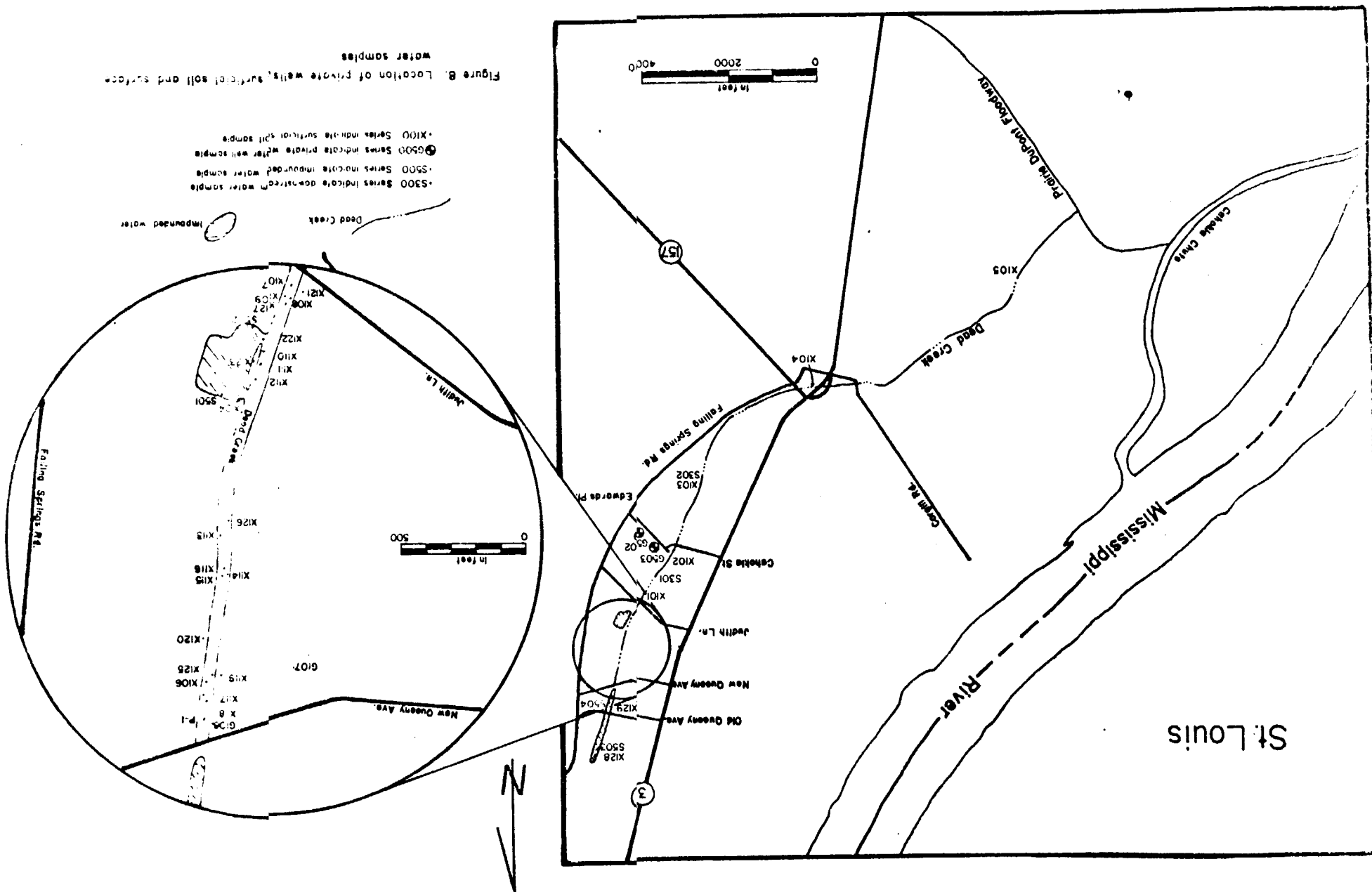
¹ Hazardous waste number.

² Chemical abstracts service number.

³ Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

⁴ If o.c. and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level for total cresol is 200 mg/l.

CER 008431



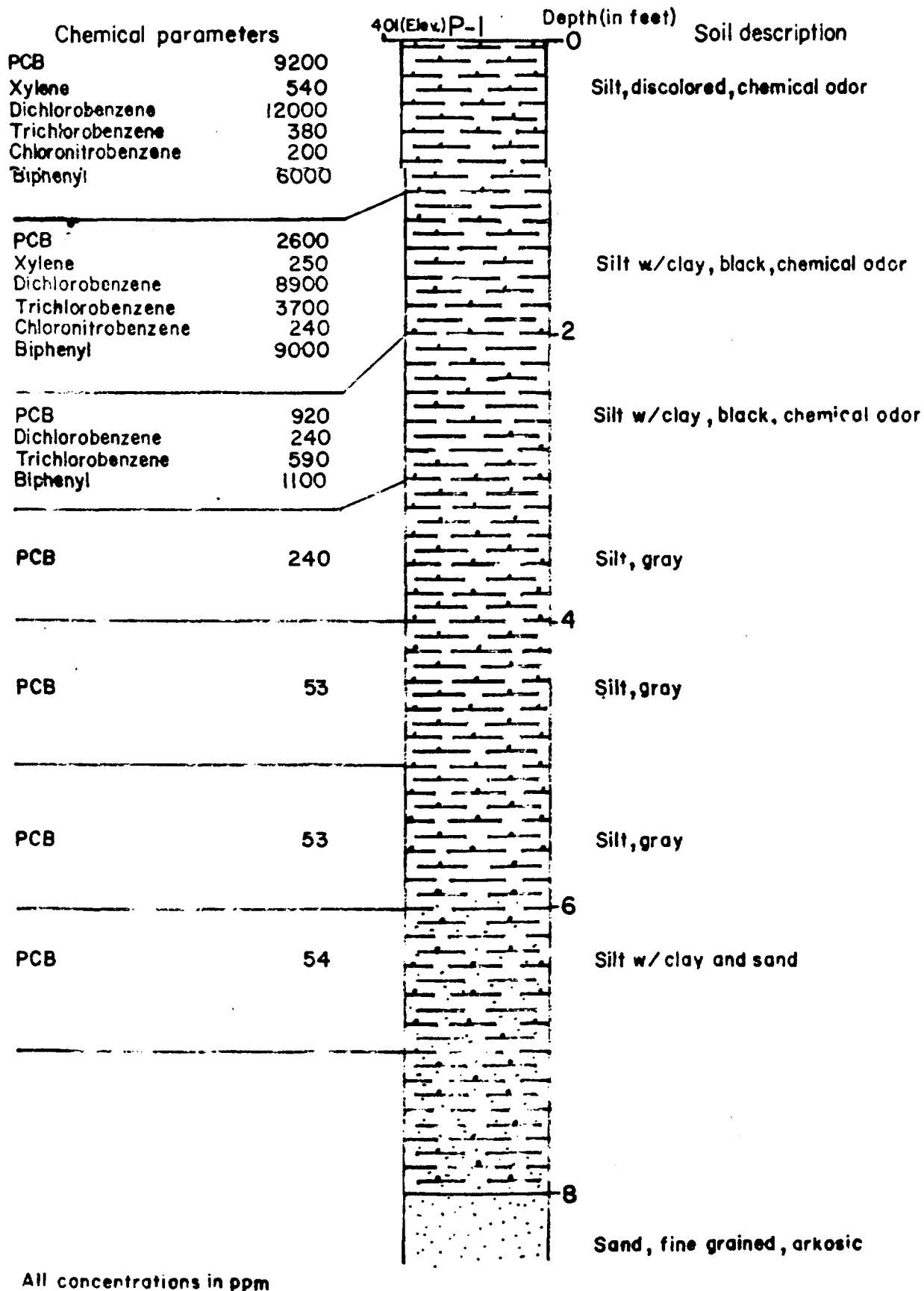
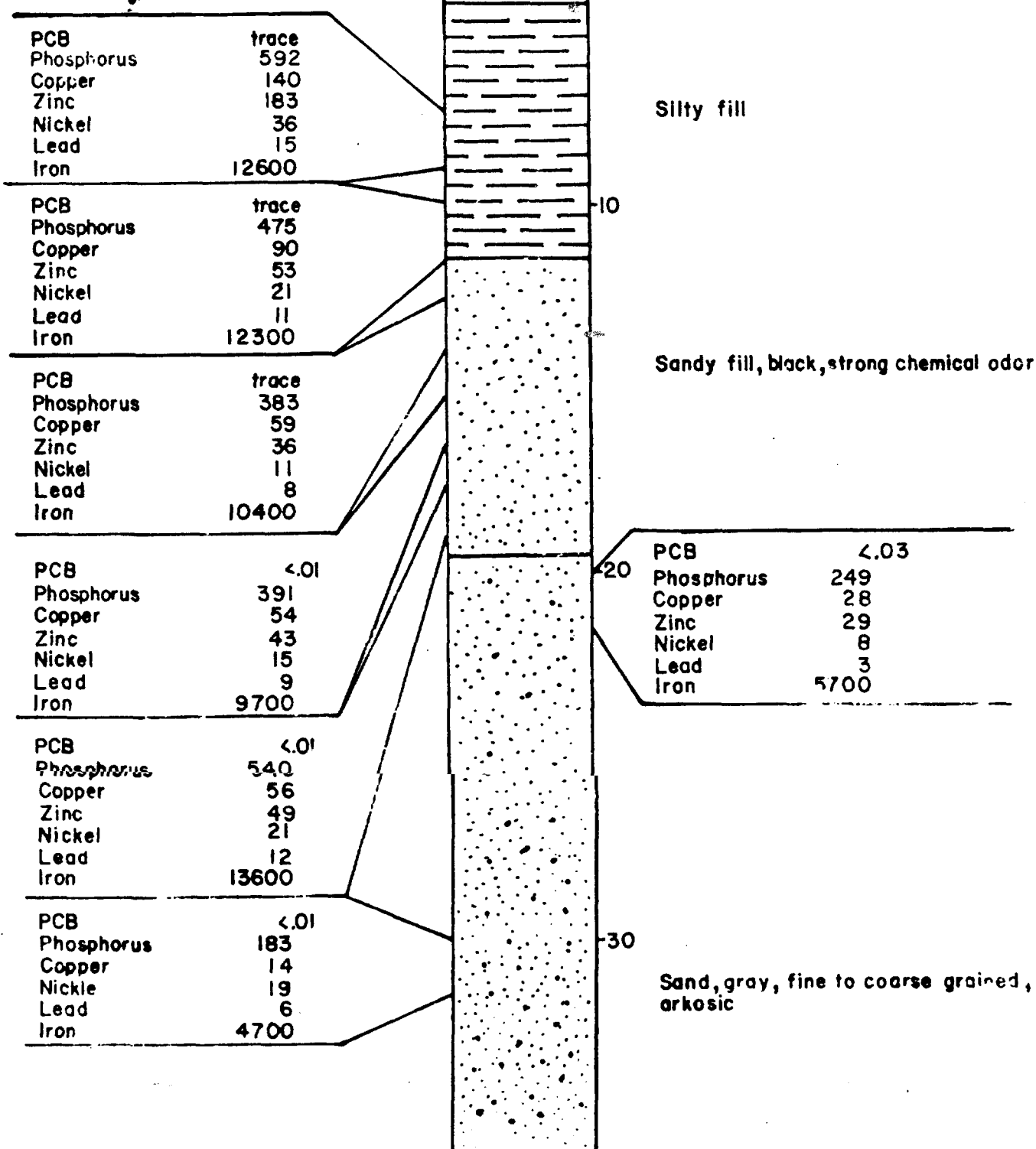


Figure 7a. Vertical distribution of organic chemicals in the creek bottom at P-1

Chemical parameters

406.6 G106 Depth(infeet)

Soil description



All concentrations in ppm

Figure 7c. Vertical distribution of PCB's and metals at G106



DATE: January 19, 1981

TO: John Renkes

FROM: Jim Kelty jk

SUBJECT: JANUARY 19, 1981 MEETING ON DEAD CREEK

In attendance were Mike Mauzy, Del Haschmeyer, Bernie Killian, Bill Busch, Jack Muraro, and Jim Kelty.

Kelty reviewed the Dead Creek problem and described Phase Two results; also discussed were aerial photos, excavation pits, and the thermal imagery survey. A general discussion followed in which suggestions were made for further investigations and possible remedial actions. It was generally agreed that an area about 800 ft. long, 15 ft. wide, and 2 ft. deep in the north end of the ditch should be cleaned up as soon as funds are available.

The following further steps were decided on:

- 1) Continue to monitor ground water wells west of the ditch
- 2) ^{investigation} Sample wells on Monsanto Chemical Company property for contamination by organics
- 3) Attempt to map out old quarry pit areas from aerial photos and thermal imagery.
- 4) Determine the possibility of obtaining a "restrictive covenant" to prevent any future construction over any contaminated pits or dump sites
- 5) Contact USEPA, Region V, Bill Constantellos, to determine additional measures needed to obtain "Superfund" assistance for clean-up

JK:jks

cc: Mike Mauzy
Bill Busch
Rauf Piskin
Reed Newman

RECORD OF COMMUNICATION		<input checked="" type="checkbox"/> PHONE CALL <input type="checkbox"/> DISCUSSION <input type="checkbox"/> FIELD TRIP <input type="checkbox"/> CONFERENCE <input type="checkbox"/> OTHER (SPECIFY) _____	
		(Record of item checked above)	
TO: Mr. Perry Mann IEPA - Collinsville	FROM: David DiTraglia <i>DD</i> Engineering Unit II U.S. EPA	DATE October 23, 1981	TIME A.M.
SUBJECT Sauget Toxic Dump - <u>Preliminary</u> Lab Results			
SUMMARY OF COMMUNICATION Mann had learned through a phone conversation with Springfield Laboratory personnel, the following preliminary lab results on three water (leachate) samples taken October 2, 1981, adjacent to the Sauget Toxic Dump: <div style="margin-left: 40px;"> I. Sample A A. Chloroaniline - 24,000ppb B. Chloronitro benzene - 21,000ppb C. Dichlorophenol - 31,000ppb D. 2,4 D - 22,000ppb </div> <div style="margin-left: 40px;"> II. Sample B A. Chlorophenol - 30,000ppb B. Chloroaniline - 22,000ppb C. Dichlorophenol - 7,000ppb D. Chloronitrobenzene - 10,000ppb E. Phenol - 1,700ppb F. Methylbenzosulfaamide - 2,000ppb G. Benzoic acid - 7,000ppb H. Benzene carboxylic acid - 1,200ppb I. 2,4 D - 17,000ppb </div> <div style="margin-left: 40px;"> III. Sample C A. Chloroaniline - 38,000ppb B. Phenol - 11,000ppb C. Dichlorophenol - 27,000ppb D. Dichloroaniline - 2,800ppb E. Dichlorophenol - 2,000ppb F. Benzoic acid - 2,000ppb G. 2,4 D - 8,000ppb </div>			
CONCLUSIONS, ACTION TAKEN OR REQUIRED <div style="margin-left: 40px;"> F. Benzoic acid - 2,000ppb G. 2,4 D - 8,000ppb </div>			
INFORMATION COPIES TO: Fenner, Schulteis/Buttolph, Miner/DiDomenico			

Other constituents of the leachate were qualitatively identified as follows:

- (1) Chlorobenzene
- (2) Dichlorobenzene
- (3) Chloromethylphenol
- (4) Aniline
- (5) Chloronitrobenzene
- (6) Biphenol 2-OL
- (7) Methylbenzene
- (8) Methylphenol
- (9) Trichlorophenol
- (10) Sulfamide
- (11) Benzene
- (12) Biphenol Di OL
- (13) Dichloroaniline
- (14) Dichloronitrobenzene
- (15) Nitroaniline
- (16) Chloronitroaniline
- (17) Nitrophenol
- (18) Benzocarboxylic
- (19) Hydroxybenzoic acid
- (20) Benzoic acid
- (21) N-Butyl-pthalate
- (22) Methylbenzenesulfaamide
- (23) Benzenesulfaamide
- (24) Methylphenol
- (25) Phenol
- (26) 2-cyclo-pentanol
- (27) 4-methyl-2-pentanol
- (28) Chlorophenol
- (29) Toluene

These above constituents were identified in the leachate samples below a detection level of 1000-7000ppb. (Depending on the specific chemical). The PCB and TCP analysis will be performed in about one week. When complete, the IEPA will get a copy of the full laboratory analysis and will send us a copy. The sediment samples taken were not analyzed at the time of our phone conversation.

Monsanto

M.E. Webb, WGK

September 8, 1980

SOIL SAMPLE ANALYSIS

Paul Heisler, Safety Dept.

W. Small
H. Horner
~~J. Blockner~~
R. Sinise
T. Berner
K. Schutzenhofer
File

cc J.W. Mollon
N. CURTIS
W. PAPA GEORGE

This report summarizes our analytical investigation of the soil sample that was taken from an area of "Dead Creek" near Judith Lane in Cahokia on 8/29/80. The sample was taken in an area where there were reported incidents of sustained smoking and burning of the soil.

I. General Appearance

The sample is moist, dark brown soil with a "musty" type odor but no distinctive chemical odor. The moisture content, determined as loss on drying at 110 C, is 19.5%.

II. Burning Characteristics

A portion of the dry sample was placed in a crucible and slowly heated with a gas burner. The sample started to smoke as it was being heated but no spontaneous ignition occurred. On applying an open flame to the sample, ignition occurred and a self-sustaining combustion continued for several seconds.

After burning subsided the sample was heated with the full heat of the burner for several minutes. Total weight loss on ignition was 33.6%.

III. Phosphorus Analysis

The question arose as to the possibility of elemental phosphorus being the initiator of combustion in the area where the sample was taken. If this were the case, significant amounts of P_2O_5 should be present in the sample.

To test for phosphate, a portion of the original sample was extracted by boiling in water for 1/2 hour. The aqueous extract was tested for phosphate by ion chromatography. None was detected. The lower limit of detection was 10 ppm PO_4 on an original sample basis.

A sulfuric acid-persulfate digestion procedure for total phosphorus (all form of phosphorus) was performed. Total phosphorus was found to be 0.04% (as P). This low level is probably attributable to normal soil background.

CER 069609

IV. Solvent Extraction and Analysis

A portion of the original sample was extracted with methylene chloride using a SOXHLET extraction apparatus.

A gas chromatographic analysis of the extract was made on a Varian 3700 using a 6 ft. column of 5% Dexil 410 and flame ionization detection. The chromatogram showed an "envelope" of unresolved peaks eluting at high temperature typical of high boiling, high molecular weight, oil.

On evaporation of the methylene chloride from an aliquot of the extract, a dark brown, viscous oil comprising 9.2% by weight of the sample, was recovered.

An infrared analysis of the oil phase gave a spectrum that is typical of long chain aliphatic hydrocarbon. While the oil cannot be identified specifically, it is possible a waste lubricating or crank case oil, etc.

V. Ignition Residue Analysis

The residue remaining after ignition is a fine, brown powder. A semi-quantitative emission spectrographic analysis for metals was run on the residue.

The elements detected and approximate concentrations are as follows:

<u>> 1%</u>	<u>0.1 to 1%</u>	<u>< 0.1%</u>
Si, Fe, Cu	Al, Ca, Mg, Ni Sn, Pb, Ti, Zn	Mn, Cr

Because the copper concentration was felt to be unusually high, a quantitative analysis was made for copper by atomic absorption spectroscopy. The copper concentration was found to be 3.9%

Conclusions

The high concentration of oil found in the sample readily explains the combustible nature of the soil.

There were no indications of any organic chemicals or phosphorus in the sample that might associate it with a WCK origin.

The high level of copper found in the sample could be a clue to the source of the oil.

WCK Notebook Ref. p. 1770639, 1770837

CER 069610

M. E. Webb
M.E. Webb
AR&D

July 7, 1971

Mr. Glen Kaffenberger
Water Pollution Section
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

Dear Mr. Kaffenberger:

On Thursday, July 1, 1971 a set of five samples was collected from our operational test wells at the liquid waste disposal area. The analysis of these samples for C.O.D. and phenol along with previous analysis of test well samples are listed below.

<u>Date</u>	<u>Test Well #</u>	<u>Phenol (ppm)</u>	<u>C.O.D. (ppm)</u>
4-29-71	1	2	0
	2	0	0
	3	0	0
	4	0	0
	5	0	0
6-9-71	1	< 1	< 60
	4	< 1	0
	6	< 1	< 60
7-1-71	1	< 1	< 10
	2	< 1	< 10
	3	< 1	< 10
	4	< 1	< 10
	5	< 1	< 10

All of the samples were analyzed in our laboratory using a Technicon Auto Analyzer. The analysis of these samples was conducted in conjunction with our regular plant samples and therefore the results which are reported as less than (<) a number are equal to the lower limit of detection for the calibration curve used. The zero values reported are equivalent to none detectable.

If I can be of further help, please let me know.

bcc: G. Bratsch
dy D. Otto
P. Heisler
C Buckley

Michael R. Foresman
Senior Engineer -
Pollution Control

September 26, 1980

- 6 Pond sediment sample obtained at the northwest corner of pond, one (1) yard south into the pond. 9 inches (composite)
- 7 Sediment sample obtained from Dead Creek, 16 yards north of Cahokia Street. Sample obtained adjacent to standing water in Dead Creek. 12 inches (composite)
- 8 Sediment sample obtained from Dead Creek, immediately north of Edgar Street in front of concrete culvert. Sediment obtained from an area of standing water in the creek. 6 inches (composite)
- 9 Water sample obtained from standing water in Dead Creek, 45 yards north of Cahokia Street.
- 10 Water sample obtained from standing water in Dead Creek immediately north of Edgar Street in front of concrete culvert.
- 11 Sediment sample obtained from Dead Creek just south of the intersection of routes #3 and #157. Sample obtained from an area of standing water, adjacent to the pedestrian walk bridge. 6 inches (composite)
- 12 Soil sample obtained from the dry bed of Dead Creek, northwest of the sewage treatment plant, and just north of the concrete culvert under the rock road. Surface sediment appeared to be sewage treatment plant sludge (dried). 12 inches (composite)

cc: Southern Region
Bill Child
Jim Kelty
Attorney General ✓

000001

September 26, 1980

Division File

Tom Powell - Southern Region

St. Clair County - General - Cahokia/Dead Creek

On Thursday September 25, 1980, this writer, along with Ken Mensing, were in Cahokia, Illinois to obtain soil and water samples from Dead Creek and its peripheries. Sample points included both the east and west sides of the most heavily contaminated area, between Judith Lane and Queeny Avenue, and randomly selected points downstream within the ditch. We arrived at the site approximately 9:50 a.m. and collected a total of twelve (12) samples. A minimal amount of precipitation had fallen the evening before we visited the site for sampling. The ground surface was damp with no blowing dust when we procured the samples. The following is a listing of the sample points:

<u>Sample Number</u>	<u>Location</u>	<u>Depth of Sample</u>
1	Soil sample obtained 96 yards south of Queeny Avenue and 6 yards west of snowfence on west side of Dead Creek. Sample was collected from northeast corner of bean field.	12 inches (composite)
2	Soil sample obtained 120 yards south of Queeny Avenue and 1 yard east of snowfence on the east side of Dead Creek.	12 inches (composite)
3	Soil sample obtained 30 yards north of Judith Lane and 1 yard west of snowfence on the west side of Dead Creek.	12 inches (composite)
4	Soil sample obtained from drainage cut, midway between Dead Creek and the pond near Judith Lane.	9 inches (composite)
5	Pond sediment sample obtained at the north side of the confluence of the drainage cut with pond, one (1) yard east into the pond.	12 inches (composite)

007700

September 22, 1980

- 11 135 yards north of sample points #8, #9, and #10 - this sample was obtained within the ditch, adjacent to the southern edge of the metal structure (Waggoner's) upon the suspected dump area. Surface
- 12 5 yards west of sample point #11 next to the water in the ditch. Surface

Besides these twelve samples, one other sample was obtained during our visit. This sample was taken 15 yards north of sample #12. The sample's physical characteristics are a sponge-like foam material, greyish-yellow in color with speckles throughout. The material was very resilient, in that it could be compacted, after which it would spring back into its original shape. No special analysis jar was provided for this sample. All samples obtained this day were transported back to the lab by Jim Kelty.

cc: Southern Region
Bill Child
Jim Kelty
Attorney General ✓

Note: It had rained on September 16, 1980, the day before we visited the site for sampling. The ground surface was damp with no blowing dust when we procured the samples.

September 22, 1980

Division File

Tom Powell - Southern Region

St. Clair County - General - Cahokia/Dead Creek

On Wednesday, September 17, 1980, this writer, along with Ken Mensing, were in Cahokia, Illinois to obtain soil samples from Dead Creek. We arrived at the site approximately 9:30 a.m. and gathered a total of twelve (12) samples from within the creek. The following is a listing of the sample points:

<u>Sample Number</u>	<u>Location</u>	<u>Depth of Sample</u>
1	25 feet south of Judith Lane	6 inches
2	125 feet north of Judith Lane but south of the affluence to the pond	Surface
3	125 feet north of Judith Lane but south of the affluence to the pond	12 inches deep
4	100 yards north of sample points #2 and #3	Surface
5	100 yards north of sample points #2 and #3	12 inches deep
6	100 yards north of sample points #4 and #5	Surface
7	100 yards north of sample points #4 and #5	9 inches deep *
8	100 yards north of sample points #6 and #7	Surface
9	100 yards north of sample points #6 and #7 (rubber like material)	9 inches deep
10	100 yards north of sample points #6 and #7 (clay-like material)	18 inches deep

* Immediately above the gray layer that appeared to be clay.

ILLINOIS EPA LABORATORY ANALYSIS OF SAMPLES TAKEN SEPTEMBER 8, 1980
THROUGH SEPTEMBER 17, 1980 FROM CAMOKIA DEAD CREEK AREA. (ALL RESULTS IN PPM UNLESS OTHERWISE STATED).

	ANTHRACENE	COPPER	LEAD	NICKEL	PHOSPHOROUS	ZINC	PCB's	CHLOR-DANE	Alkyl-Benzene	Aliphatic H/C	TOLUENE	XYLENE	(Di) Chloro Benzene	(Tri) Chloro Benzene	Chloro Nitro Benzene	Dichloro Phenol
Soil Normals (PPM)	250	70	16	80	1180	132	0	0	0	0	0	0	0	0	0	0
Location	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1 Soil-North Ditch 50 yds South of Queens Ave. <i>on back of 113 ppb</i>	1400	840	< 100	< 10	< 2000	260	1600 5200 17000	N.D.	N.D.	N.D.	240	89	790	310	1260	500
2 Soil-Center Ditch Mid-way Between Queens Ave. and Judith Ln.	2300	13000	2000	1000	32100	19000	59	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
3 Soil-South Ditch 40 yds North of Judith Ln.	4800	32000	2400	3500	120000	25000	120	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
4 Soil 25 yds. South of Judith Ln. (PPM)	690	7300	510	1150	15000	6200	120	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Surface Water Normals	< 5.0	< 0.02	< 0.1	< 1.0	< 1.0	< 1.0	0	0	0	0	0	0	0	0	0	0
5 Water-Pond East of Ditch (PPM)	0.4	0.32	< 0.05	< 0.05	0.9	0.7	4 PPB	N.D.	N.D.	60 PPB	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Drinking Water Normals	< 1.0	< 1.0	< 0.05	< 1.0	< 1.0	< 5.0	0	0	0	0	0	0	0	0	0	0
6 Water-Well at 101 Walnut St.	0.2	0.03	< 0.02	< 0.005	< 1.0	1.5	13 PPB	14 PPB	< 10 PPB	N.D.	0	0	0	0	0	0
7 Water-Well at 113 Edward Pl.	0.4	< 0.005	< 0.05	< 0.01	< 1.0	0.2	N.D.	N.D.	N.D.	N.D.	0	0	0	0	0	0
8 Water-Well at 118 Edward Pl.	0.2	< 0.005	< 0.02	< 0.01	< 1.0	5.4	N.D.	N.D.	N.D.	N.D.	0	0	0	0	0	0
Health Effects	skin effects & respiratory problems	Affects Kidneys, Skin, & Kidneys	Causes Anemia & Affects Kidneys	Affects Skin & Respiratory System	Affects Liver, Skin, Blood, Teeth	Generally of low Toxicity.	Affects Skin, Eyes, Liver.	Affects Skin, Kidneys, Liver.	Affects Lungs, Skin.	Essentially Non-Toxic	Affects Liver & Kidneys	Causes Liver & Kidney Diseases.	Affects Liver, Lungs, Skin	Affects Liver, Lungs, Skin.	Affects Liver, Lungs, Skin	Affects CNS & Kidneys

CER 008124

Monsanto

FROM
NAME-LOCATION-PHONE: J. P. Miere - N3A (4-4837)

DATE September 18, 1980
SUBJECT ANALYSIS OF SOIL FROM DEAD CREEK
REFERENCE
TO W. B. Papageorge - G4WA

cc. D. R. Bishop - A3NB
J. A. Gloeckner - 1740
D. Guerry - T2B
O. Hicks - N1E
R. F. Ivory - 1250
R. G. Kaley - N1E
R. Sinise - 1740
R. L. Wasson - R2E

Confirming the conclusions reached in our recent phone conversation, I am documenting the analytical program for the approximately thirteen soil samples obtained on September 17, 1980 from the Dead Creek area near Cahokia, Illinois.

We will analyze these soils for polychlorinated biphenyls (PCBs), total phosphorus, elemental phosphorus, phosphate esters and the 26 metals in our ICAP program, including all the metals reported by the Illinois EPA except potassium. We do not intend to perform a special analysis for potassium, since it is a common metal of little toxicological concern.

The analytical program will include sufficient quality assurance samples (blanks, spikes and replicates) to comply with our Good Laboratory Practices program.

If you have questions or comments on this plan, please contact me (4837) or Bob Kaley (4763).



J. P. Miere

ms

CER 008115

IN - TO (REV.)